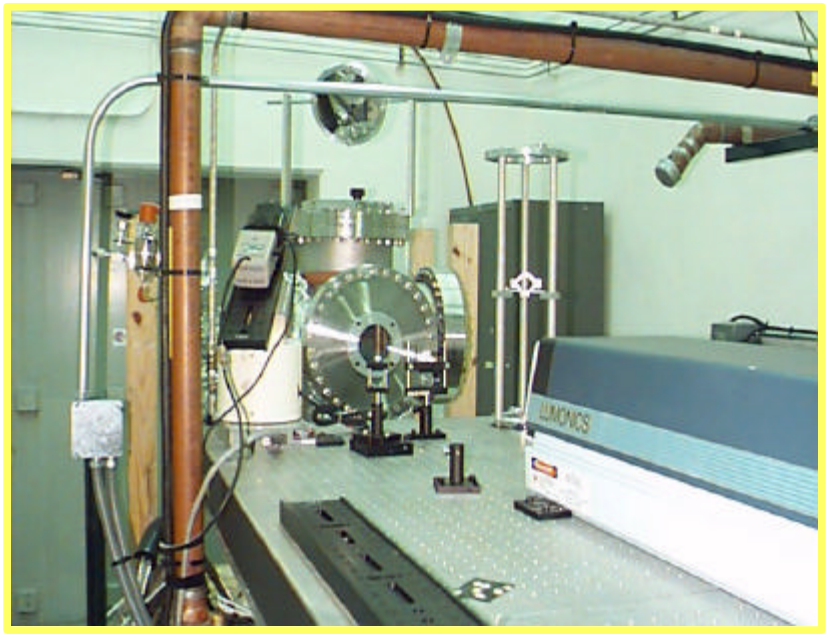
Laser/Material Interactions for Propulsion Concepts



Objective

This effort will use an in-vacuum, torsional pendulum system to measure directly the impulse imparted due to interactions with a target material and a known laser intensity to directly determine thrust produced by laser and light falling on surfaces. The threshold between ablative and photon momentum transfers must be known and photon momentum transfer directly measured.

Why Needed

Several propulsion concepts examine the use of solar sails, laser sails and other laser propulsion schemes. The impulse must be measured directly. For high energy density, ablation and subsequent heating by the laser can lead to significant impulses. Photon momentum transfer can produce a force that can be measured as a function of materials' reflectance and specular nature. This data is required to demonstrate these effects and verify analytical calculations.

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Sponsor

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